ABSTRACT

A signal flow driven circuit physical synthesis technique for automatic generation of a high performance and compact layout from a circuit schematic based on signal flow information. The signal flow driven layout methodology is based on two observations: matching and symmetry requirement most critical with devices in the critical signal paths, parasitic reduction (mostly capacitance, resistance, and inductance if possible) is most critical with circuit nodes in the signal path. The inventive device includes input module, critical device generator, signal flow driven placement module, and parasitic aware routing module. Input module loads circuit netlist, technology files, signal flow information and parasitic constraints. Critical device generator synthesizes circuit component with optimized for matching, symmetry, area and parasitic loading. Placement module places circuit components while optimizing for those in the critical signal flow. Routing module achieves routing for all nets while observing parasitic loading constraints.